Castle and Byrnes, 1998 Data Set 10

Reference: Castle, J.W., and A.P. Byrnes, 1998, Petrophysics of low-permeability Medina Sandstone, Northwestern Pennsylvania, Appalachian Basin: The Log Analyst, v. 39, n. 4, p. 36-46.

Authors' affiliation: Clemson University and Kansas Geological Survey

Second Reference: Laughrey, C.D. and J.A. Harper, 1986, Comparisons of Upper Devonian and Lower Silurian tight formations in Pennsylvania -- geological and engineering characteristics: in Spencer, C.W. and R.F. Mast, Geology of tight gas reservoirs, American Association of Petroleum Geologists Studies in Geology 24, p. 9-43.

Age: Early Silurian

Formation: Grimsby Sandstone of Medina Group

Location: Cooperstown Field, Appalachian Basin, Venango County, Pennsylvania

Well: Cox-Wiggins 1A and Wuchevich 1

Depth range: not stated.

Depositional Setting: "The Cabot Head Shale… is overlain by middle and upper shoreface and nearshore sands of the lowermost Grimsby Formation. Varicolored red and green argillaceous sandstones of the uppermost Grimsby, which formed within a prograding coastal sand-mud complex, generally overlie these coastal sands." p. 15 of Laughrey and Harper, 1986.

Lithology: quartz arenites, subarkoses, and sublithic arenites.

Alteration: "Common cements include quartz, hematite, and chlorite. In general, the upper part of the Grimsby sandstone is hematitic and the lower part is chloritic. Rare to minor authigenic illite, potassium feldspar, dolomite, siderite, and anhydrite also occur. Detrital clay content in the study area is typically small, with only minor interstitial clay and shale laminae. ... Thin-section study shows that pressure solution and quartz-overgrowth cement have occluded most of the original pore space in the finer-grained rocks, but not in the coarser-grained rocks."

Production: gas

Core measurement conditions: Klinkenberg-corrected gas permeability was measured at 2,700 psi. Porosity values measured at 2,700 psi were generally 97% of values measured at 400 psi.

Data entry: manual entry of square symbols from Figure 6 in the referenced paper.